

What is claimed is:

1. A method of identifying, in a sample, a receptor which is capable of binding to a known ligand, comprising the steps of:
  - a. providing a fusion molecule comprising said known ligand covalently linked to a threshold reporter enzyme molecule, said threshold reporter enzyme molecule being capable of reacting with a suitable substrate so as to generate a detection signal,
  - b. contacting said sample containing said receptor with said fusion molecule to form a complex between said receptor and said known ligand, and
  - c. detecting the presence of said complex by incubating said complex with said suitable substrate so as to generate the detection signal, thereby identifying the receptor.
2. The method of claim 1, wherein step (b) further comprises washing said sample such that any fusion molecule not forming a complex with said receptor is removed.
3. The method of claim 1 wherein said method further comprises a cell-based assay.
4. The method of claim 1, wherein the sample comprises mammalian cells expressing said receptor.
5. The method of claim 1, wherein the detection signal is selected from the group consisting of a fluorescence signal, a chemiluminescent signal, and a colorimetric signal.
6. The method of claim 1, wherein said ligand is a polypeptide ligand.
7. The method of claim 1, wherein said ligand is soluble.

8. The method of claim 1, wherein said ligand is insoluble.
9. The method of claim 1, wherein said ligand is a naturally occurring polypeptide molecule.
10. The method of claim 1, wherein said ligand is a recombinant polypeptide molecule.
11. The method of claim 1, wherein the receptor is a cell surface receptor.
12. The method of claim 1, wherein said threshold reporter enzyme molecule is beta-Lactamase.
13. The method of claim 12, wherein said suitable substrate is a beta-Lactamase substrate.
14. The method of claim 13, wherein said beta-Lactamase substrate is CCF2.
15. The method of claim 13, wherein said beta-Lactamase substrate is nitrocefin.
16. A method of identifying a ligand from a plurality of polypeptide molecules in a sample, said ligand being capable of binding to a known receptor, comprising the steps of:
  - a. providing a fusion molecule comprising said ligand covalently linked to a threshold reporter enzyme molecule, said threshold reporter enzyme molecule being capable of reacting with a suitable substrate to generate a detection signal,
  - b. contacting said sample containing said known receptor with said fusion molecule to form a complex between said known receptor and said ligand, and
  - c. detecting the presence of said complex by incubating said complex with said suitable substrate so as to generate the detection signal, thereby identifying the ligand.

17. The method of claim 16, wherein step (b) further comprises washing said sample such that any fusion molecule not forming the complex with said receptor is removed.
18. The method of claim 16 wherein said method further comprises a cell-based assay system.
19. The method of claim 16, wherein the sample comprises mammalian cells expressing said receptor.
20. The method of claim 16, wherein the detection signal is selected from the group consisting of a fluorescence signal, a chemiluminescent signal, and a colorimetric signal.
21. The method of claim 16, wherein said ligand is a polypeptide ligand.
22. The method of claim 16, wherein said ligand is soluble.
23. The method of claim 16, wherein said ligand is insoluble.
24. The method of claim 16, wherein said ligand is a naturally occurring polypeptide molecule.
25. The method of claim 16, wherein said ligand is a recombinant polypeptide molecule.
26. The method of claim 16, wherein the receptor is a cell surface receptor.
27. The method of claim 16, wherein said threshold reporter enzyme molecule is beta-Lactamase.
28. The method of claim 27, wherein said suitable substrate is a beta-Lactamase substrate.
29. The method of claim 28, wherein said beta-Lactamase substrate is CCF2.
30. The method of claim 28, wherein said beta-Lactamase substrate is nitrocefin.

31. A method of identifying a compound that mediates the binding activity between a known ligand and a known receptor, comprising the steps of:
- a. providing a fusion molecule comprising said known ligand covalently linked to a threshold reporter enzyme molecule, said threshold reporter enzyme molecule being capable of reacting with a suitable substrate so as to generate a detection signal,
  - b. contacting said fusion molecule with said known receptor in the presence of said compound, so as to form a complex between said known receptor and said known ligand,
  - c. detecting the presence of said complex by incubating said complex with said suitable substrate so as to generate the detection signal, and
  - d. determining the amount of the detection signal and comparing that amount to an amount of a detection signal obtained in the absence of said compound, wherein a reduction in the amount of the detection signal in the presence of said compound indicates that said compound inhibits the binding of said ligand to said receptor, and a increase in the amount of the detection signal in the presence of said compounds indicates that said compound enhances the binding of said ligand to said receptor.
32. The method of claim 31, wherein in step (b), said fusion molecule is contacted with said known receptor first, followed by contacting with said compound.
33. The method of claim 31, wherein in step (b), said fusion molecule is contacted with said compound first, followed by contacting with said known receptor.
34. The method of claim 31, wherein in step (b), said known receptor is contacted with said compound first, followed by contacting with said fusion molecule.

35. The method of claim 31, wherein an increase in said detection signal in step (d) indicates that said compound is an enhancer of the binding between said known ligand and said known receptor.
36. The method of claim 31, wherein a decrease in said detection signal in step (d) indicates that said compound is an inhibitor of the binding between said known ligand and said known receptor.
37. The method of claim 31, wherein step (b) further comprises washing said sample such that any fusion molecule not forming the complex with said receptor is removed.
38. The method of claim 31 wherein said method further comprises a cell-based assay.
39. The method of claim 31, wherein the detection signal is selected from the group consisting of a fluorescence signal, a chemiluminescent signal, and a colorimetric signal.
40. The method of claim 31, wherein said ligand is a polypeptide ligand.
41. The method of claim 31, wherein said ligand is soluble.
42. The method of claim 31, wherein said ligand is insoluble.
43. The method of claim 31, wherein said ligand is a naturally occurring polypeptide molecule.
44. The method of claim 31, wherein said ligand is a recombinant polypeptide molecule.
45. The method of claim 31, wherein said receptor is a cell surface receptor.
46. The method of claim 31, wherein said ligand is the tumor necrosis factor alpha, and said receptor is the tumor necrosis factor receptor 2.

47. The method of claim 31, wherein said ligand is the interleukin-8, and said receptor is the interleukin-8 receptor A.
48. The method of claim 31, wherein said ligand is erythropoietin, and said receptor is the erythropoietin receptor.
49. The method of claim 31, wherein said threshold reporter enzyme molecule is beta-Lactamase.
50. The method of claim 49, wherein said suitable substrate is a beta-Lactamase substrate.
51. The method of claim 50, wherein said beta-Lactamase substrate is CCF2.
52. The method of claim 50, wherein said beta-Lactamase substrate is nitrocefin.
53. The method of claim 31, wherein said compound is an organic, or inorganic chemical molecule.
54. The method of claim 31, wherein said compound is a small peptide molecule.
55. The method of claim 31, wherein said known ligand is a viral envelope protein.
56. The method of claim 31, wherein said known receptor is a cellular viral receptor protein.
57. A method of identifying for a compound that blocks viral entry and inhibits viral infection comprising the method of claim 31 wherein said known ligand is a viral envelope protein, and said known receptor is a cellular viral receptor protein.
58. A method of identifying for a compound that blocks viral entry and inhibits viral infection comprising the method of claim 31 wherein said known ligand is a cellular viral receptor protein, and said known receptor is viral envelope protein.

59. The method of claim 57, wherein said known ligand is selected from the group consisting of viral glycoprotein, gp120, and gp41.
60. The method of claim 57, wherein said known receptor is a CD4 molecule.
61. The method of claim 58, wherein said known ligand is a CD4 molecule.
62. The method of claim 58, wherein said known receptor is selected from the group consisting of viral glycoprotein, gp120, and gp41.
63. A composition for use in identifying specific binding activity between a ligand and a receptor, comprising a ligand covalently linked to a threshold reporter enzyme molecule, said threshold reporter enzyme molecule being capable of reacting with a suitable substrate so as to generate a detection signal.
64. A composition for use in identifying a compound which interferes with the binding of a known receptor to a known ligand using the method of claim 31, comprising said compound, said known receptor, and said known ligand covalently linked to a threshold reporter enzyme molecule, said threshold reporter enzyme molecule being capable of reacting with a suitable substrate so as to generate a detection signal.